

**CLAIMS**

1. An OX40R binding agent which is the peptide sequence corresponding to amino acids 94-124 (SEQ ID NO: 6) of human OX40L.
- 5 2. The OX40R binding agent which is a peptide sequence of human OX40L consisting of a peptide sequence corresponding to amino acids 94-124 (SEQ ID NO: 6) wherein one or more amino acids have been deleted, and comprising amino acids 107-116 (SEQ ID NO: 8) of human OX40L.
- 10 3. The OX40R binding agent of claim 2 which is a peptide sequence corresponding to 107-116 (SEQ NO ID: 8) of human OX40L.
- 15 4. The OX40R binding agent which is an active mutant of peptides of claims 1 to 3, wherein one or more of the amino acids has been conservatively substituted.
5. An OX40R binding agent which is a peptide having the sequence corresponding to 107-111 (SEQ NO ID: 13) of human OX40L.
- 20 6. An OX40R binding agent which is a fusion polypeptide or peptide comprising an amino acid sequence of claims 1 to 4, and an amino acid sequence belonging to a protein sequence other than human OX40L, mouse OX40L or rabbit OX40L.

7. The OX40R binding agent of claim 6, wherein the fusion polypeptide or peptide comprises the amino acid sequence belonging to one or more of the following protein sequences: membrane-bound proteins, extracellular domains of membrane-bound protein, immunoglobulin constant region, multimerization domains, extracellular proteins, signal peptide-containing proteins, export signal-containing proteins.
8. An OX40R binding agent which is an active fraction, precursor, salt, or derivative of an OX40R binding agent of claims 1 to 7.
9. An OX40R binding agent which is a peptide, a peptide mimetic, or a non-peptide mimetic designed on the sequence and/or the structure of an OX40R binding agent of claim 3 or 5.
10. An OX40R binding agent which is an active conjugate or complex of an OX40R binding agent of claims 1 to 9 with a molecule chosen amongst radioactive labels, biotin, fluorescent labels, cytotoxic agents, drug delivery agents.
11. A nucleic acid encoding for an OX40R binding agent of claims 6 or 7.
12. A vector of viral or plasmid origin which allows the expression of the OX40R binding agents encoded by the nucleic acid of claim 11.

13. A prokaryotic or eukaryotic host cell which has been transformed with an expression vector according to claim 12.

14. An isolated stable cell line substantially enriched in cells of claim 13.

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15. The cell line of claim 14 wherein the OX40R binding agent is secreted or expressed on the membrane surface.

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16. A method of producing an OX40R binding agent of claims 6 or 7, comprising culturing cells of claims 13 to 15 and collecting said binding agent.

17. Purified preparations of the OX40R binding agents of claims 1 to 10.

18. Use of the OX40R binding agents of claims 1 to 10 as a medicament.

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19. Use of the OX40R binding agents of claims 1 to 10 as antagonists of human OX40L.

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19. Use of the OX40R binding agents of claims 1 to 10 as antagonists of human RANTES.

21. Use of the OX40R binding agent of claims 1 to 10 as active ingredients in pharmaceutical compositions for the prophylaxis and/or treatment of autoimmune diseases, inflammations, or infections.

22. A pharmaceutical composition for the prophylaxis and/or treatment of diseases related to CD4<sup>+</sup> T cells, comprising a OX40R binding agent of claims 1 to 10 as active ingredient.
- 5 23. The pharmaceutical composition of claim 22, in combination with pharmaceutically acceptable carriers, excipients, stabilizers, and/or diluents.
24. The pharmaceutical compositions of claim 22 or 23, wherein the diseases related to CD4<sup>+</sup> T cells are transplant autoimmune diseases, inflammations, or infections.
- 10 25. Use of the OX40R binding agents of claims 1 to 10 or of the cells of claims 13 to 15 for the detection of the extracellular domain of OX40R protein as membrane-bound or a soluble protein.
- 15 26. Use of the OX40R binding agents of claims 1 to 10 or of the cells of claims 13 to 15 for the detection of activated CD4<sup>+</sup> T cells.
27. Supports for the detection, the purification, and / or the concentration of OX40R extracellular domain, as a membrane-bound or a soluble protein, or of activated CD4<sup>+</sup> T cells, said supports having an OX40R binding agent of claims 1 to 10 in an immobilized form.
- 20 28. Methods for the detection, the purification, and / or the concentration of OX40R extracellular domain, as membrane-bound or a soluble protein, or of activated

CD4<sup>+</sup> T cells in a sample, said method comprising contacting said sample with the supports of claim 27 or with the cells of claims 13 to 15.

28. A method of claim 28, wherein the method is used to diagnose a condition associated to decreased or increased presence of CD4<sup>+</sup> T cells or of soluble OX40R protein.

30. Methods for the prophylaxis and/or treatment of autoimmune diseases, inflammations, or infections comprising the administration of an OX40R binding agent of claims 1 to 10 or of the cells of claims 13 to 15.

31. A screening assay for the determination of the nature and the activity of compounds modulating OX40R-OX40L interactions comprising:

a) Forming a sample comprising the following elements:

i. An element constituting the OX40R binding agent, chosen amongst the compounds of claims 1 to 10, the cells of claims 13 to 15, and the supports of claim 27;

ii. An element constituting the OX40R moiety, chosen amongst a protein comprising the extracellular domain of OX40R, a cell line expressing OX40R extracellular domain on its surface, and a cell line secreting extracellular domain of OX40R; and

iii. The compound(s) to be tested as modulator(s) OX40R-OX40L interactions

- b) Detecting, directly or indirectly, the effect of the compounds (iii) on the interactions between the elements (i) and (ii).
- c) Comparing the effect detected in (b) amongst samples different in terms of quality and / or quantity of the elements of (a).

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32. A kit for detecting extracellular domain of OX40R protein or activated CD4<sup>+</sup> T-cells which comprises an OX40R binding agent according of claims 1 to 10, a cell of claims 13 to 15, or a support of claim 27.

10 33. A kit of claim 32 for the diagnosis of a condition due to a decreased or increased presence of CD4<sup>+</sup> T cells or of soluble OX40R protein in a sample obtained from a patient.